// C Program to implement Bus Reservation System

#include <stdio.h>

#include <stdlib.h>

#include <string.h>

// Define a structure to store bus information

struct Bus{

int busNumber;

char source[50];

char destination[50];

int totalSeats;

int availableSeats;

float fare;

};

// Define a structure to store user login information

struct User{

char username[50];

char password[50];

};

// Function to display the main menu

void displayMainMenu(){

printf("\n=== Main Menu ===\n");

printf("1. Login\n");

printf("2. Exit\n");

printf("Enter your choice: ");

}

// Function to display the user menu

void displayUserMenu(){

printf("\n=== User Menu ===\n");

printf("1. Book a Ticket\n");

printf("2. Cancel a Ticket\n");

printf("3. Check Bus Status\n");

printf("4. Logout\n");

printf("Enter your choice: ");

}

// Function to perform user login

int loginUser(struct User users[], int numUsers, char username[], char password[]){

for (int i = 0; i < numUsers; i++){

if (strcmp(users[i].username, username) == 0 && strcmp(users[i].password, password) == 0){

return i; // Return the index of the logged-in user

}

}

return -1; // Return -1 if login fails

}

// Function to book tickets

void bookTicket(struct Bus buses[], int numBuses){

printf("\nEnter Bus Number: ");

int busNumber;

scanf("%d", &busNumber);

// Find the bus with the given busNumber

int busIndex = -1;

for (int i = 0; i < numBuses; i++){

if (buses[i].busNumber == busNumber){

busIndex = i;

break;

}

}

if (busIndex == -1){

printf("Bus with Bus Number %d not found.\n", busNumber);

}

else{

printf("Enter Number of Seats: ");

int seatsToBook;

scanf("%d", &seatsToBook);

if (buses[busIndex].availableSeats < seatsToBook){

printf("Sorry, only %d seats are available.\n", buses[busIndex].availableSeats);

}

else{

buses[busIndex].availableSeats -= seatsToBook;

printf("Booking successful! %d seats booked on Bus Number %d.\n", seatsToBook, busNumber);

}

}

}

// Function to cancel tickets

void cancelTicket(struct Bus buses[], int numBuses){

printf("\nEnter Bus Number: ");

int busNumber;

scanf("%d", &busNumber);

// Find the bus with the given busNumber

int busIndex = -1;

for (int i = 0; i < numBuses; i++){

if (buses[i].busNumber == busNumber){

busIndex = i;

break;

}

}

if (busIndex == -1){

printf("Bus with Bus Number %d not found.\n", busNumber);

}

else{

printf("Enter Number of Seats to Cancel: ");

int seatsToCancel;

scanf("%d", &seatsToCancel);

if (seatsToCancel > (buses[busIndex].totalSeats - buses[busIndex].availableSeats)){

printf("Error: You can't cancel more seats than were booked.\n");

}

else{

buses[busIndex].availableSeats += seatsToCancel;

printf("Cancellation successful! %d seats canceled on Bus Number %d.\n", seatsToCancel,

busNumber);

}

}

}

// Function to check bus status

void checkBusStatus(struct Bus buses[], int numBuses){

printf("\nEnter Bus Number: ");

int busNumber;

scanf("%d", &busNumber);

// Find the bus with the given busNumber

int busIndex = -1;

for (int i = 0; i < numBuses; i++){

if (buses[i].busNumber == busNumber){

busIndex = i;

break;

}

}

if (busIndex != -1){

printf("\nBus Number: %d\n", buses[busIndex].busNumber);

printf("Source: %s\n", buses[busIndex].source);

printf("Destination: %s\n", buses[busIndex].destination);

printf("Total Seats: %d\n", buses[busIndex].totalSeats);

printf("Available Seats: %d\n", buses[busIndex].availableSeats);

printf("Fare: %.2f\n", buses[busIndex].fare);

}

else{

printf("Bus with Bus Number %d not found.\n", busNumber);

}

}

int main(){

// Initialize user data

struct User users[5] = {

{"user1", "pass1"}, {"user2", "pass2"}, {"user3", "pass3"}, {"user4", "pass4"}, {"user5", "pass5"},

};

int numUsers = 5;

// Initialize bus data

struct Bus buses[3] = {

{101, "City A", "City B", 50, 50, 500.0},

{102, "City C", "City D", 40, 40, 400.0},

{103, "City E", "City F", 30, 30, 300.0},

};

int numBuses = 3;

int loggedInUserId = -1; // Index of the logged-in user

while (1){

if (loggedInUserId == -1){

displayMainMenu();

int choice;

scanf("%d", &choice);

if (choice == 1){

char username[50];

char password[50];

printf("Enter Username: ");

scanf("%s", username);

printf("Enter Password: ");

scanf("%s", password);

loggedInUserId = loginUser(users, numUsers, username, password);

if (loggedInUserId == -1){

printf("Login failed. Please check your username and password.\n");

}

else{

printf("Login successful. Welcome, %s!\n", username);

}

}

else if (choice == 2){

printf("Exiting the program.\n");

break;

}

else{

printf("Invalid choice. Please try again.\n");

}

}

else{

displayUserMenu();

int userChoice;

scanf("%d", &userChoice);

switch (userChoice){

case 1:

bookTicket(buses, numBuses);

break;

case 2:

cancelTicket(buses, numBuses);

break;

case 3:

checkBusStatus(buses, numBuses);

break;

case 4:

printf("Logging out.\n");

loggedInUserId = -1;

break;

default:

printf("Invalid choice. Please try again.\n");

}

}

}

return 0;

}